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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,531	12/02/2005	Yutaka Takeuchi	025416-00024	2704
4372	7590	05/16/2008		
ARENT FOX LLP 1050 CONNECTICUT AVENUE, N.W. SUITE 400 WASHINGTON, DC 20036			EXAMINER ZHU, WEIPING	
			ART UNIT 1793	PAPER NUMBER
			NOTIFICATION DATE 05/16/2008	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DCIPDocket@arentfox.com  
IPMatters@arentfox.com  
Patent\_Mail@arentfox.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/559,531	<b>Applicant(s)</b> TAKEUCHI ET AL.	
	<b>Examiner</b> WEIPING ZHU	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 May 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 13-23 is/are pending in the application.
- 4a) Of the above claim(s) 20-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Status of Claims***

1. Claims 13-19 are currently under examination. The applicant's election of Invention I, claims 13-19, without traverse in the reply filed on March 7, 2008 has been acknowledged. The non-elected Invention II, claims 20-23, has been withdrawn from consideration by the examiner.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 13-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajikawa et al. (US 4,309,277) in view of JP 2000-045061.

With respect to claims 13, 17 and 18, Kajikawa et al. ('277) discloses a nitriding treatment method for performing a nitriding treatment for a workpiece in a heat treatment furnace, the method comprising (abstract, col. 3, lines 11-30 and col. 4, line 18 to col. 5, line 12):

a first step of applying a voltage between the furnace and the workpiece to heat the workpiece by means of generated glow discharge and

a second step of decreasing the voltage (i.e. the current density as claimed) after a temperature of the workpiece is in the range of 300° C to 400° C and then heating the

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workpiece up to a desired nitriding treatment temperature by using a heating element, wherein

the nitriding treatment is performed by means of nitrogen ions generated by the glow discharge.

Kajikawa et al. ('277) does not disclose the voltage is a pulse voltage having a predetermined current density as claimed. JP ('061) discloses using a pulse voltage for ion nitriding (abstract). JP ('061) does not disclose the pulse voltage having a current density of 0.05 to 7 mA/cm<sup>2</sup> and at a frequency of not less than 1 kHz as claimed.

However, it is well held that discovering an optimum value of a result-effective variable involves only routine skill in the art. In re Boesch, 617, F.2d 272, 205 USPQ 215 (CCPA 1980). In the instant case, the current density and the frequency of the pulse voltage are result-effective variables, because they would directly affect the quality of the glow discharge as disclosed by JP ('061) (abstract). See MPEP 2144.05 II. It would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the current density and the frequency as disclosed by Gomes et al. in order to achieve desired quality of the glow discharge.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a pulse voltage in the process of Kajikawa et al. ('277) in order to obtain optimum narrow glow discharge as disclosed by JP ('061) (abstract).

With respect to claim 14, Kajikawa et al. ('277) discloses that the workpiece is heated by heat generated by the glow discharge and the heating element in the first step and heating is effected in the second step such that an amount of heat generated

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by the heating element is higher than that on the first step (Fig. 4 and line 18 to col. 5, line 12).

With respect to claim 15, Kajikawa et al. ('277) does not limit the rate to decrease the voltage, which reads on the claimed feature.

With respect to claim 16, Kajikawa et al. ('277) discloses that the nitriding treatment temperature is maintained to execute the nitriding treatment after the workpiece arrives at the desired nitriding treatment temperature in the second step (col. 5, lines 1-12).

3. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kajikawa et al. (US 4,309,277) in view of JP 2000-045061 as applied to claim 13 above and further in view of JP 09-079912.

With respect to claim 19, Kajikawa et al. ('277) in view of JP ('061) does not disclose the claimed feature. JP ('912) discloses measuring both radiation and contact temperatures of a hot-rolling sheet (abstract), which reads on the claimed method for determining the temperature of the workpiece. It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the temperature of the workpiece of Kajikawa et al. ('277) in view of JP ('061) by measuring both radiation and contact temperatures as disclosed by JP ('912) in order to measure the real surface temperature of the workpiece as disclosed by JP ('912) (abstract).

### ***Conclusion***

4. This Office action is made non-final. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Weiping Zhu whose

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telephone number is 571-272-6725. The examiner can normally be reached on 8:30-16:30 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/  
Supervisory Patent Examiner, Art  
Unit 1793

WZ

5/7/2008